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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,803	08/25/2003	Douglas Curry	D/A1088	1327

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OLIFF & BERRIDGE, PLC.
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER	
KAU, STEVEN Y	

ART UNIT	PAPER NUMBER
2625	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

OfficeAction27074@oliff.com
jarmstrong@oliff.com

Office Action Summary	Application No. 10/646,803	Applicant(s) CURRY ET AL.	
	Examiner Steven Kau	Art Unit 2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 25 August 2003.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-30 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-30 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 8/25/2003 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 11/12/2003.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Preliminary Amendment

1. Applicants filed a preliminary amendment on November 25, 2003

- Specification has been amended for figure number correction.
- Claims 1-30 are pending.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on November 2, 2003 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tada et al (Tada) (US 4,893,195) in view of Yoshidome (US 6,522,425) further in view of Shimotohno (US 4,760,460).

With regard to claim 1, Tada discloses an image processing apparatus capable of eliminating moire pattern, in that he teaches a method for reducing moiré in a

halftoned image formed using a halftoner, comprising: determining moire zones {e.g. moiré pattern in image area is detected} in the full field of the image (Figure 9, col 3, lines 54-59); and adjusting each moire zone in the halftoner memory {e.g. Figure 2, col 4, lines image pickup device and CPU} to reduce the moire intensity profile of the image (col 4, lines 45-61).

Tada differs from claim 1, in that he does not explicitly teach adjusting each moire zone in the halftoner memory to reduce the moire intensity profile of the image.

Yoshidome discloses a method of predicting and processing image, in that he teaches adjusting moiré intensity (col 10, lines 3-39).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Tada to include adjusting moiré intensity taught by Yoshidmoe to lower the cost of display and to provide quality documents for either hard or soft proof (col 5, line 44-62).

With regard to claim 2, Tada differs from claim 2, in that he does not teach determining an average moire profile for a given image intensity in at least one moire zone.

Yoshidmoe teaches determining an average moire profile {e.g. outline of moiré intensity} for a given image intensity in at least one moire zone (col 10, lines 3-39).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Tada to include determining an average moire profile for a given image intensity in at least one moire zone taught by Yoshidmoe to

lower the cost of display and to provide quality documents for either hard or soft proof (col 5, line 44-62).

With regard to claim 3, Tada differs from claim 3, in that he does not teach high addressability units and adjusting the high addressability units in all moire zones.

Shimotohno discloses a method of halftone image transmission, in that he teaches high addressability units and adjusting the high addressability units in all moire zones (Figures 4-6, col 5, lines 32-67 & col 6, lines 1-11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Tada to include high addressability units and adjusting the high addressability units in all moire zones taught by Shimotohno to provide a accurate and efficient halftone image information transmission (col 3, lines 9-24).

With regard to claim 4, Tada differs from claim 4, in that he does not teach generating an inverse moire profile.

Yoshidome teaches generating an inverse moire profile {e.g. reverse processing} (Figure 14, col 26, lines 1-17).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Tada to include generating an inverse moire profile taught by Yoshidmoe to lower the cost of display and to provide quality documents for either hard or soft proof (col 5, line 44-62).

With regard to claim 5, Tada differs from claim 5, in that he does teach the moire profile includes a plurality of component moire profiles at different frequencies.

Shimotohno teaches the moire profile includes a plurality of component moire profiles at different frequencies (col 7, lines 13-26).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Tada to include the moire profile includes a plurality of component moire profiles at different frequencies taught by Shimotohno to provide a accurate and efficient halftone image information transmission (col 3, lines 9-24).

With regard to claim 6, Tada differs from claim 6, in that he does not teach the frequencies are in a range from about 0.1 cycles per inch to about 100 cycles per inch.

Shimotohno teaches the frequencies are in a range from about 0.1 cycles per inch to about 100 cycles per inch {e.g. frequencies may be minimized} (col 7, lines 13-26).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Tada to include the frequencies are in a range from about 0.1 cycles per inch to about 100 cycles per inch taught by Shimotohno to provide a accurate and efficient halftone image information transmission (col 3, lines 9-24).

With regard to claim 7, Tada differs from claim 7, in that he does not teach zeroing the moire profile in all zones for a given image intensity level.

Yoshidome teaches zeroing the moire profile in all zones for a given image intensity level {e.g. adjusting coefficient of moiré intensity} (col 29, lines 30-62).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Tada to include zeroing the moire profile in all zones for a given image intensity level taught by Yoshidome to lower the cost of display and to provide quality documents for either hard or soft proof (col 5, line 44-62).

With regard to claim 8, Tada differs from claim 8, in that he does no teach zeroing the moire profile in all zones for a predetermined number of image intensity levels.

Yoshidome teaches zeroing the moire profile in all zones for a predetermined number of image intensity levels {e.g. adjusting coefficient of moiré intensity} (col 29, lines 30-62).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Tada to include zeroing the moire profile in all zones for a predetermined number of image intensity levels taught by Yoshidome to lower the cost of display and to provide quality documents for either hard or soft proof (col 5, line 44-62).

With regard to claim 9, Tada differs from claim 9, in that he does not teach the high addressability units further comprises determining moire adjustment values which are based on a folded zone equation.

Yoshidome teaches determining moire adjustment values which are based on a folded zone equation {e.g. a weight adjustment equation for moiré intensity adjustment} (Figure 2, col 13, lines 54-67 & col 14, lines 1-18).

Shimotohno teaches the high addressability units (Figures 4, 5 & 6, col 5, lines 32-67 & col 6, lines 1-11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Tada to include determining moire adjustment values which are based on a folded zone equation taught by Yoshidome to lower the cost of display and to provide quality documents for either hard or soft proof (col 5, line 44-62, Yoshidome), and the high addressability units taught by Shimotohno to provide a accurate and efficient halftone image information transmission (col 3, lines 9-24, Shimotohno).

With regard to claim 10, Tada differs from claim 10, in that he does not teach adjusting the high addressability units comprises repeated adjusting.

Shimotohno teaches adjusting the high addressability units comprises repeated adjusting {e.g. it is a common practice to run a software program iteratively. For instance, Figure 3 is programmed..} (col 10, lines 13-59).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Tada to include adjusting the high addressability units comprises repeated adjusting taught by Shimotohno to provide a accurate and efficient halftone image information transmission (col 3, lines 9-24).

With regard to claim 11, Tada teaches storing results of the adjusting in the halftoner {e.g. a CPU is used to store results} (Figure 2, col 11, lines 17-38).

With regard to claim 12, Tada differs from claim12, in that he does not teach determining the moire phase angle zones in the full field of the image comprises using a full-field moire intensity function.

Yoshidome teaches determining the moire phase angle {e.g. moiré phase angle is 180 + screen angle} zones in the full field of the image comprises using a full-field moire intensity function (col 9, lines 56-67 & col 10, lines 1-2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Tada to include determining the moire phase angle zones in the full field of the image comprises using a full-field moire intensity function taught by Yoshidome to lower the cost of display and to provide quality documents for either hard or soft proof (col 5, line 44-62).

With regard to claim 13, Tada differs from claim 13, in that he does not teach defining the moire intensity function as having at least one sinusoidal component.

Yoshidome teaches defining the moire intensity function as having at least one sinusoidal component (col 18, lines 12-29).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Tada to include defining the moire intensity function as having at least one sinusoidal component taught by Yoshidome to lower the cost of display and to provide quality documents for either hard or soft proof (col 5, line 44-62).

With regard to claim 14, Tada differs from claim 14, in that he teaches the moire is due to use of irrational halftone dots {e.g. subtle deviation of phase based on the periodicity in half tone process} (col 25-34).

With regard to claim 15, Tada differs from claim 15, in that he does not teach determining at least one of a frequency and an angle of the moiré.

Yoshidome teaches determining at least one of a frequency and an angle of the moiré (col 36, lines 61-65).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Tada to include determining at least one of a frequency and an angle of the moiré taught by Yoshidome to lower the cost of display and to provide quality documents for either hard or soft proof (col 5, line 44-62).

With regard to claim 16, Tada differs from claim 16, in that he does not teach determining an intensity of the moire as a function of a halftoner addressability unit.

Shimotohno teaches determining an intensity of the moire as a function of a halftoner addressability unit (Figures 4, 5 & 6, col 5, lines 32-67 & col 6, lines 1-11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Tada to include determining an intensity of the moire as a function of a halftoner addressability unit taught by Shimotohno to provide a accurate and efficient halftone image information transmission (col 3, lines 9-24).

With regard to claim 17, Tada teaches outputting halftone images (Figure 2, col 4, lines 62-68 & col 5, lines 1-31).

With regard to claim 18, Tada teaches determining which output image has the lowest observable moiré (Figure 2, col 4, lines 62-68 & col 5, lines 1-31).

With regard to claim 19, Tada differs from claim 19, in that he does not teach determining moire amplitude within a two-dimensional halftone coordinate system.

Yoshidome teaches determining moire amplitude within a two-dimensional halftone coordinate system (col 14, lines 27-42).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Tada to include determining moire amplitude within a two-dimensional halftone coordinate system taught by Yoshidome to lower the cost of display and to provide quality documents for either hard or soft proof (col 5, line 44-62).

With regard to claim 20, Tada differs from claim 20, he teaches generating the halftone image using irrational halftone angles (col 4, lines 45-55).

With regard to claim 21, Tada differs from claim 21, in that he does not teach generating a simulated output image; and evaluating the simulated output image.

Yoshidome teaches generating a simulated output image (col 5, lines 33-41); and evaluating the simulated output image (col 30, lines 65-67 & col 31, lines 1-3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Tada to include generating a simulated output image and evaluating the simulated output image taught by Yoshidome to lower the cost of display and to provide quality documents for either hard or soft proof (col 5, line 44-62).

With regard to claim 30, Tada differs from claim 30, in that he does not teach the image forming device is a hyperacuity image forming device.

Yoshidome teaches the image forming device is a hyperacuity image forming device {e.g. sharp, accurate and convenient system} (col 5, lines 44-62).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Tada to include the image forming device is a hyperacuity image forming device taught by Yoshidome to lower the cost of display and to provide quality documents for either hard or soft proof (col 5, line 44-62).

With regard to claim 22, Tada teaches an image forming device having a halftoner memory usable to reduce moire in a halftone image containing halftone cells (Figure 2, col 8, lines 9-11), comprising a moire phase angle zone determiner that determines moire amplitude for the full field of the image and the folded field of the halftoner memory; a comparator that compares the full field moire phase angle zones to moire phase angle zones in the folded field of the halftoner memory; an adjustor that adjusts high addressability units of the halftoner memory to reduce a moire intensity profile of the image on a halftone cell basis; and a modulator that modulates a light beam to generate an output image having reduced moiré (Figure 2, col 4, lines 59-67 & col 5, lines 1-36).

Tada differs claim 22, in that he does not teach a moire phase angle zone determiner that determines moire amplitude for the full field of the image and the folded field of the halftoner memory; a comparator that compares the full field moire phase angle zones to moire phase angle zones in the folded field of the halftoner memory; an

adjustor that adjusts high addressability units of the halftoner memory to reduce a moire intensity profile of the image on a halftone cell basis.

Yoshidome teaches a moire phase angle zone determiner that determines moire amplitude for the full field of the image and the folded field {e.g. Figures 3B & 3C, screen ruling} (col 16, lines 28-40) of the halftoner memory (col 10, lines 3-21); a comparator that compares the full field moire phase angle zones to moire phase angle zones in the folded field of the halftoner memory (Figures 3B & 3C, col 33-37 & col 6, lines 52-63).

Shimotohno teaches an adjustor that adjusts high addressability units of the halftoner memory to reduce a moire intensity profile of the image on a halftone cell basis (Figures 4-6, col 5, lines 32-67 & col 6, lines 1-11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Tada to include a moire phase angle zone determiner that determines moire amplitude for the full field of the image and the folded field of the halftoner memory; a comparator that compares the full field moire phase angle zones to moire phase angle zones in the folded field of the halftoner memory taught by Yoshidome to lower the cost of display and to provide quality documents for either hard or soft proof (col 5, line 44-62, Yoshidome), and an adjustor that adjusts high addressability units of the halftoner memory to reduce a moire intensity profile of the image on a halftone cell basis taught by Shimotohno to provide a accurate and efficient halftone image information transmission (col 3, lines 9-24, Shimotohno).

With regard to claim 23, Tada differs from claim 23, in that he does not teach the moire intensity profile {e.g. outline of moiré intensity} is determined using a full-field function (col 10, lines 3-39).

With regard to claim 24, Tada differs from claim 24, in that he does not teach the moire intensity profile is determined using a folded field function.

Yoshidome teaches the moire intensity profile is determined using a folded field function {e.g. a weight function for moiré intensity adjustment} (col 15, lines 1-16).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Tada to include the moire intensity profile is determined using a folded field function taught by Yoshidome to lower the cost of display and to provide quality documents for either hard or soft proof (col 5, line 44-62).

With regard to claim 25, Tada differs from claim 25, in that he does not teach at least one of a moire frequency determiner and a moire angle determiner.

Yoshidome teaches at least one of a moire frequency determiner and a moire angle determiner {e.g. the period of grid units is determined by the screen ruling and screen angle} (col 6, lines 52-63).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Tada to include at least one of a moire frequency determiner and a moire angle determiner taught by Yoshidome to lower the cost of display and to provide quality documents for either hard or soft proof (col 5, line 44-62).

With regard to claim 26, Tada differs from claim 26, in that he does not teach the moire intensity profile is determined as a function of a halftoner addressability unit.

Shimotohno teaches the moire intensity profile is determined as a function of a halftoner addressability unit (Figures 4-6, col 5, lines 32-67 & col 6, lines 1-11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Tada to include the moire intensity profile is determined as a function of a halftoner addressability unit taught by Shimotohno to provide a accurate and efficient halftone image information transmission (col 3, lines 9-24).

With regard to claim 27, Tada teaches a determiner that determines which amplitude and phase result in an output image having a reduced observable moiré (col 11, lines 54-67 & col 12, lines 1-6).

With regard to claim 28, Tada differs from claim 28, in that he does not teach the moire phase angle determiner operates within a two-dimensional halftone coordinate system.

Yoshidome teaches the moire phase angle determiner operates within a two-dimensional halftone coordinate system (col 14, lines 27-42).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Tada to include the moire phase angle determiner operates within a two-dimensional halftone coordinate system taught by Yoshidome to lower the cost of display and to provide quality documents for either hard or soft proof (col 5, line 44-62).

With regard to claim 29, the structure elements of device claim 22 perform all steps of device claim 29. Thus claim 22 is rejected under 103(a) for the same reason discussed in the rejection of claim 29.

Correspondence Information

5. Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement is traversed (37 CFR 1.143).

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Kau whose telephone number is (571) 270-1120. The examiner can normally be reached on Monday to Friday, from 8:30 AM – 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Twyler Lamb can be reached on (571) 272-7406. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S. Kau
Patent Examiner
Division: 2625
April 23, 2007

TWYLER LAMB
SUPERVISORY PATENT EXAMINER